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A PULSED ULTRASONIC THERMOANEMETER

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UNEDITED ROUGH DRAFT TRANSLATION

A PULSED ULTRASONIC THERMOANEMOTER

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21 November 1959.

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A PULSED ULTRASONIC THERMOANEMOMETER

N. P. Fateyev

The well-known instruments for measuring the temperature of an air stream, the velocity of which is measured from the difference in the frequencies of pulse-modulated ultrasonic oscillations propagating in two opposed directions in a close dynamic system, cannot exclude the influence of the stream on the results of the measurement because of possible dynamic heating of the sensitive element, and also the influence of the temperature and humidity of the medium.

The proposed instrument—a pulsed ultrasonic thermoanemometer—based on the same principle of measurement does not have the indicated defects, because a device is used in it which adds the frequencies of pulse repetition in two channels.

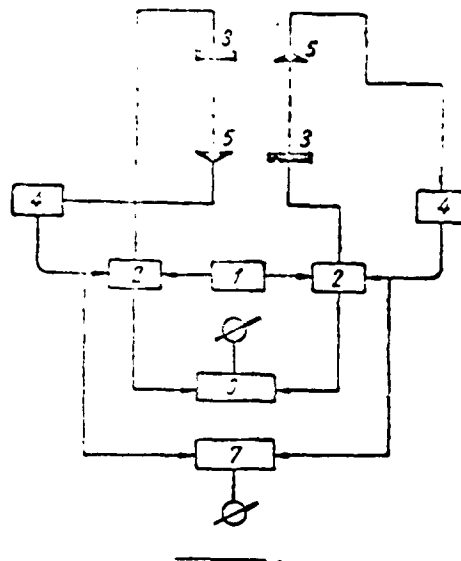
The pulsed ultrasonic thermoanemometer shown in the drawing comprises oscillator 1, two controlled cascades 2, to which are connected ultrasonic pulse generators 3, two amplifiers 4 with two sound receivers 5 as their input, and meters for the difference 6 and sum 7 of the frequencies of the oscillations entering both channels.

When an ultrasonic pulse reaches one of the sound receivers there appears at the input of the amplifier a signal which cuts off the

respective controlled cascade of the generator. When ultrasonic pulse reception is interrupted the output cascade is triggered and gives the following ultrasonic pulse. The interval between repetitions and the frequency of the pulses in each channel will be determined by the passage time from the sonic generator to the receiver, as a result of which influence of the stream on the temperature measurement is excluded.

Subject of Invention

A pulsed ultrasonic thermoanemometer in which the velocity of a stream is measured from the difference between the frequencies of pulse-modulated ultrasonic oscillations propagating in two opposed directions in a closed dynamic system, differing in that in order to exclude the effect of the stream on the temperature measurement a device is used for summing the above mentioned frequencies of pulse repetition in the channels.



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